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Demmelmaier, Ingrid; Åsenlöf, Pernilla; Opava, Christina H

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Supporting stepwise change

Improving health behaviors in rheumatoid arthritis with physical activity as the example

Ingrid Demmelmaier¹ PhD PT, Pernilla Åsenlöf² Ass Prof PT and Christina H Opava^{1,3} Prof PT

¹ Division of Physiotherapy, Department of Neurobiology, Care Sciences and Society, Karolinska Institutet, Stockholm, Sweden

² Department of Neuroscience, Uppsala University, Sweden

³ Department of Rheumatology, Karolinska University Hospital, Stockholm, Sweden

Corresponding author

Ingrid Demmelmaier (ingrid.demmelmaier@ki.se)

Department of Neurobiology, Care Sciences and Society

Division of Physiotherapy 23100

Karolinska Institutet

SE-141 83 Huddinge, Sweden

Summary

Management of chronic diseases such as rheumatoid arthritis (RA) includes behavior change towards smoking cessation, healthy eating, and sufficient physical activity. To initiate and maintain behavior change over time, individual, behavioral and contextual factors should be included. This paper presents some issues on the implementation of physical activity behavior in rheumatoid arthritis, describing motivational and self-regulatory aspects and how they relate to long-term maintenance. We also point out implications for healthcare and directions for future research.

Keywords

Arthritis, health-enhancing physical activity, behavior change, maintenance, social cognitive theory, motivation, self-regulation, self-management

Rheumatoid arthritis

Rheumatoid arthritis (RA) is an auto-immune disorder affecting about one percent of the general population and 24 million persons in the world [1]. The main symptom is inflammation in joints and muscles, affecting joint and muscle function, aerobic work capacity and significantly increasing the risk of disability, cardiovascular disease and premature death [2, 3]. Disease-modifying anti-rheumatic drugs and biologic agents have improved inflammation control during the past decade, resulting in better health and functioning in the majority of patients. However, about one third of all individuals with RA do not benefit from these drugs [4] and many of the clinical problems and comorbidities seen in RA can be prevented or attenuated by adequate health behaviors such as smoking cessation [5] and sufficient physical activity [6]. The implementation of these health behaviors in populations with and without long-term disease is a challenge and needs further attention [5, 7, 8]. For example, a study including 21 countries reports that less than 15 percent of individuals with RA reach 30 minutes of physical activity on a moderate intensity level three days per week [9].

Health-enhancing physical activity

The strong evidence for the beneficial effects of physical activity in the general population serves as the basis for recommendations on health-enhancing physical activity (HEPA). HEPA includes twice-weekly muscle strength training combined with either 150 minutes of moderate-intensity physical activity per week or 20 minutes of aerobic exercise three times a week. The recommendations for populations with long-term disease such as RA are modified slightly so that the physical activity should be adapted to the variations in disease course [6]. So far, intervention studies of HEPA in RA have been evaluated in two randomized controlled studies with partially contradictory results. One study reported increased HEPA levels but no effects on health-related outcome [10], while the other found improvements in perceived health and muscle function without being able to demonstrate any change in HEPA levels [11]. Thus, the mechanisms behind the positive outcome were unclear and the providers' coaching skills were not measured. It has been proposed that better methods to measure, implement and maintain HEPA in RA are needed [12, 13] and that self-management interventions in RA should integrate individual, behavioral and contextual aspects [12]. Individual aspects include demographic, medical and psychological issues, behavioral aspects include 'overuse' and pacing of physical activity while contextual aspects include access to exercise facilities and social support.

Maintenance of health behaviors

As for other health behaviors, the great challenge may not be to initiate an increase in physical activity but rather to maintain the behavior over time [14, 15]. A recent review of physical activity and dietary behaviors in patient and non-patient samples concluded that interventions are more likely to achieve maintenance if they are conducted over more than 24 weeks, include some face-to-face contact, use more than six behavioral strategies and include follow-up prompts [16]. Not surprisingly, favorable expectations of a future positive outcome are predictive of attempts to change health behavior, while perceived satisfaction with the actual outcome predicts maintenance [17].

Several theories have been developed to describe the determinants of health behavior and to guide behavior change interventions. According to the *Transtheoretical Model* [18] behavior change occurs step-wise in five different stages; from the pre-contemplation stage when change is not even considered by the individual to the maintenance stage when a health behavior is stable and has become a habit. One clinical implication is that the healthcare provider should explore each patient's motivation and readiness to change according to these stages, and adapt measures to the current stage. *Self-regulation of behavior*, defined as a goal-guidance process to attain and maintain personal goals, is central in *Social Cognitive Theory* [19] and *Self-Determination Theory* [20, 21]. At least three phases can be distinguished in this process; a) selecting and setting behavioral goals, b) activities to achieve the goals, and c) goal attainment and long-term maintenance. Examples of self-regulatory skills are individual progressive goal-setting, self-monitoring and analyzing own specific health behavior, using self-rewards to reinforce the behavior, and developing plans to prevent relapse into a previous, undesired behavior. In RA, it has been reported that the use of patient-set goals for physical activity (internal goals) is positively correlated with physical activity behavior [22]. Somewhat contradictory, one meta-analysis of interventions in RA found the use of self-regulation skills to be beneficial for depressive symptoms and anxiety, but not for physical activity behavior [23].

Self-efficacy is defined as a person's confidence in performing a specific behavior to achieve a goal in spite of perceived barriers. It is influenced by four basic sources: own experiences of success or failure to perform a task, seeing others' success or failure, persuasion by others that one is capable (or not), and physiological input such as increased sympathetic activity and pain. Thus, self-efficacy is part of the self-regulatory process in two ways: as a result from a specific behavior and as a predictor of a specific behavior [24]. It should thus be assessed to ensure a realistic goal-setting and be boosted at follow-ups of the performed activities. Maintenance is facilitated by identifying 'risk situations' with perceived low self-efficacy, and taking preventive measures to reduce the risk of relapse. The predictive value of self-efficacy varies between different health behaviors, demonstrating stronger correlations with safety behaviors such as cancer screening, mixed results for physical exercise and weaker correlations with smoking cessation and condom use [25]. In arthritis, self-efficacy has been identified as a predictor of physical activity behavior [26]. The Social Cognitive Theory and Self-Determination Theory integrate motivational and self-regulatory mechanisms to explain and affect health behavior. However, empirical studies in the general population have suggested an important distinction in that motivation and readiness to change predict attempts to improve health behavior, whereas self-regulatory capacities are predictive of success and maintenance over time in smoking cessation [17, 27], dietary behaviors [28] and physical exercise [14]. This implies that *high motivation* and readiness to change is necessary but not always sufficient for maintenance, whereas *self-regulatory skills* need to be adapted and applied by individuals in their own specific context to enable maintenance in e.g. HEPA behavior. The results may also be valid for persons with chronic conditions like RA. Self-management interventions such as the Arthritis Self-Management Program and the Chronic Disease Self-Management Program [29, 30] include explicit self-regulation techniques and have proven effective on long-term health outcomes and self-efficacy in the RA population.

Supporting stepwise change to HEPA

For an overview of the approaches described below, see Table 1.

A *traditional didactic approach* in healthcare, based on the assumption that patients are rational and act after considering the pros and cons of certain behaviors, is to provide information about the benefits of HEPA. It may also include planning together with the patient about how to reach HEPA and breaking down the final desired goal into sub-goals. The therapist prescribes specific exercises to perform on a regular basis, according to written and oral instructions. The patient returns home with a written home assignment, individually adapted according to the clinical assessment made by the therapist. A follow-up is scheduled and the patient is expected to exercise according to the plan. If not, e.g. because of a flare in disease symptoms, the exercise quota may be adjusted by the therapist to a lower level and evaluated again in additional follow-ups. In several cases these measures result in increased physical activity but the maintenance over time is a great challenge, and many patients will return to their previous, sedentary behaviors when no longer supervised by a therapist.

A *self-management approach* aims to support 'the individual's ability to manage the symptoms, treatment, physical and psychosocial consequences and life style changes inherent in living with a chronic condition'. [31]. It integrates motivational and self-regulation strategies partly overlapping

those used in cognitive-behavioral approaches [32] to reach long-term change in health behavior such as HEPA.

In this approach, the healthcare professional uses a patient-centered *communication strategy* such as motivational interviewing (MI) to explore motivation and readiness to change behavior [33]. MI is based on the assumption that the patient has the resources to bring about change and the task for the therapist is to support the patients to reach their important behavioral goals. It includes four principles for the therapist to follow: expressing empathy, exploring discrepancy between the patient's desired and current behavior, rolling with resistance, and supporting self-efficacy. Using this strategy means that the therapist poses questions rather than gives advice, e.g. 'Tell me about your concerns about exercise'. He or she does not confront the patient when discrepancy between the patient's goals and behavior occurs, but rather elicits ambivalence; e.g. 'So you really want to exercise regularly, but you have obviously encountered some barriers. Tell me more about your experiences'. Intensive MI has proven efficient to increase short-term physical activity in patients with osteoarthritis, but the effect was not maintained over 12 months [15].

A self-management approach to HEPA also includes a *behavior change strategy* using several self-regulatory techniques to support maintained physical activity. The healthcare professional guides in SMART goal-setting (Specific, Measurable, Acceptable, Realistic and Time-set) and detailed planning of when, where and how the physical activities are to be performed. 'Have you decided on which weekdays you will go to the gym this week?' and 'Have you decided what intensity you aim to reach during your night walk, in terms of heart rate and breathing?' may be useful questions for the therapist. The rationale is to assist the patient in moving on from cognition to action. To enable realistic goal-setting, the patient can be asked to rate perceived self-efficacy for specific goals, e.g. on a 0-10 scale, and modify the goal-setting if needed. The patient also monitors own behavior, i.e. registers important events before, during and after physical activity e.g. by keeping a simple log. The idea is to learn about the determinants of physical activity behavior and how to 'set the stage' to facilitate HEPA. The information is used to identify barriers and facilitators within and outside the patient, and thus serves as a base for problem-solving and relapse prevention. In relapse prevention, risk situations for falling back into sedentary behavior are identified and plans are formulated to prevent and 'recover' from relapses. One common risk situation is holiday, which may change routines and challenge habits that are not fully integrated. The therapist may ask: 'Considering what you have learned about your HEPA behavior so far, what can you think of that would increase your chances to keep up your physical activity level during your holiday?' A plan for relapse prevention could include revised SMART goal-setting, bringing walking shoes in the luggage and asking the spouse for reminders to take walks during the holiday. In RA, a period with aggravation of disease symptoms may be a serious risk situation for relapse. An individual's plan to meet this threat may include management of negative cognitions: 'Not being able to exercise as usual does not mean that everything is ruined. I will get back on track in some time', as well as adjustment of the physical activity so that joints with acute inflammation are less engaged, e.g. as in pool exercises.

It should be noted that the term ‘self-management’ is commonly used among practitioners, but the meaning is often less complex than the specific approach described above. Rather, it may mean merely giving advice (asked for or not) or simply how compliant the patient is to medical instructions [34].

Table 1. Characteristics of a traditional didactic approach and a self-management approach to implement HEPA

Approach	Information about HEPA	Goal-setting for HEPA	Patient role	Main components
Traditional didactic approach	Given by the therapist	Set by the therapist, maybe discussed with the patient	Expected to be rationale and adhere to the advice given by the therapist	Information, advice, prescription of HEPA, follow-up
Self-management approach	Need of information explored and given by the therapist after permission from the patient	Set by the patient, developed in interaction with the therapist to ensure realistic, progressive goals	Expected to have the resources to manage behavior change into HEPA by learning self-regulatory skills	Patient-centered <i>communication strategy</i> (e.g. motivational interviewing) to explore motivation and readiness to change. <i>Behavior change strategy</i> using SMART goal-setting and planning, monitoring and facilitating own HEPA behavior, making plans to prevent relapse into sedentary habits and follow-ups

Implementation within and outside healthcare

Successful implementation of physical activity programs within healthcare requires providers that are skilled in techniques to promote behavior change, and we suggest that both motivational and self-regulatory strategies should be considered. Expanding the biomedical model of disease and health into a biopsychosocial model of illness and well-being challenges the traditional medical management of RA, including the assumptions that patients act rationally according to advice from healthcare. The transition from paternalistic models of healthcare into patient-centered models recognizing patients as experts of their own disease is progressing in small steps, and the use of MI is getting more common among healthcare professionals. However, the systematic use of self-regulatory strategies needs further dissemination, highlighting issues about suitable providers, methods and arenas for implementation.

First, there is a need for an increased competence among healthcare professionals which requires updated education with skills training at basic and advanced levels. *Second*, the incentives for healthcare to work with maintained health behavior such as HEPA in RA must be improved. This includes a shift from economic systems mainly based on the number of patient visits to more qualitative outcomes such as patients' self-management skills. *Third*, alternative providers may be of great value, such as the trained lay persons functioning as group leaders in the Chronic Disease Self-Management Program [35]. *Fourth*, it is important to identify subgroups in the RA population that can manage their HEPA outside healthcare, freeing resources to those in need of more extensive support. *Fifth*, there is a need to develop further collaboration between healthcare and wellcare organizations, e.g. by an increased use of 'Exercise on prescription' [36]. Indeed, wellcare may have a favorable situation to incorporate motivational and self-regulatory aspects of HEPA, assuming a client-centered perspective and being free of the paternalistic history that seems to change too slowly in healthcare. *Sixth*, patient-driven innovations open up for new interactions between healthcare and patients [37], such as web-based tools to support health behavior change towards HEPA. However, the common challenge in all the above suggestions is how to integrate biomedical knowledge about RA and its medication with knowledge about health behavior change and strategies to support maintained HEPA and other health behaviors.

Future perspectives

Studies integrating physiological, behavioral and contextual aspects of HEPA in RA are ongoing. The inclusion of motivational as well as self-regulatory strategies seems promising to establish and maintain HEPA over time. Future research should address questions on subgroups in the RA population in need of various degrees of support, within and outside the healthcare system. Consequently, it is urgent to develop models where healthcare, wellcare and patient organizations can cooperate to a greater extent. Complementary studies of sedentary behavior in RA are needed as the determinants and relevant mechanisms are not automatically the same as for physical activity behavior.

Executive summary

Health-enhancing physical activity:

- HEPA recommendations in long-term disease such as RA are similar to those for healthy adults and need further implementation

Supporting step-wise change to HEPA:

- Motivational and self-regulation strategies seem promising to initiate and maintain HEPA behavior over time

Implementation within and outside healthcare:

- To implement HEPA within the healthcare system, healthcare professionals need skills to support motivational and self-regulatory strategies among patients with RA
- There is a need to identify subgroups within the RA population, suitable to manage their HEPA in alternative arenas outside healthcare

- Cooperation between healthcare, wellcare and patient organizations should be further developed and may facilitate HEPA in RA and other long-term disease

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Note: Papers of special interest have been marked with * (12, 16, 21)

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